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ABSTRACT

An analysis of the content and methods of college courses in map use yields a three-section result. The first is a rather traditional overview of the general uniformity in content (scale, coordinates, symbols, relief, and directions) but some diversity in methods. The focus is usually on map use skills. The second part classifies and analyzes the methodological diversity. A challenge to map use educators about the nature and future of map use courses is posed in the third section. Major emphasis on map appreciation and map relevance could greatly increase the appeal of such courses to general students and adult learners. The comments are directed only to complete courses, not situations where map use skills are part of another course such as physical geography. (Author)

CONTENTS AND METHODS IN MAP USE COURSES

BY

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INTRODUCTION (and ABSTRACT)

An analysis of the content and methods of map use courses yields a three-section result. The first is a rather traditional overview that discusses the general uniformity in content (scale, coordinates, symbols, relief and directions) but some diversity in methods. The focus is usually on map use skills. The second part classifies and analyzes that diversity. A challenge to map use educators about the nature and future of map use courses is posed in the third section. Major emphasis on map appreciation and map revelance could greatly increase the appeal of such courses to general students and adult learners. The comments are directed only to complete courses, not situations where map use skills are part of another course such as physical geography.

COMMENTS ON EXISTING COURSES

There are relatively few map use courses in the United States. The Mapping Sciences Education Data Base for a thirty-eight state area found only seventy-six (76) course titles to categorize as "Map Interpretation" (Dahlberg, 1980, *Table 3*). Course syllabi of a small sample (6) of those courses were collected through two written requests to members of the Cartography Specialty Group (CSG) of the Association of American Geographers. Further information was obtained from discussions with American cartography instructors at various conferences. This first segment of the paper is a qualitative review to illustrate the similarities and diversities within the course structures. It is not an attempt to quantify or imply that any method is superior to the others.

The data reveal strong agreement in the core content but wide variation in the order and methods of presentation of map use courses. Most of the courses agree upon the core content consisting of scale, coordinates, symbols, relief and directions. The order in which these core elements are taught varies greatly. Their various components tend to be taught either in clusters of content (for example, all coordinates systems taught in one block) or taught as interspersed segments in conjunction with the various themes and map types used during the courses. There are apparent advantages with both arrangements.

The basic published materials used in most courses include the textbook by Muehrcke (1978 and 2nd ed. in 1986) and the U.S.G.S. topographic quadrangles at various scales. A variety of other published maps, including highway, weather and urban street maps, are generally included by the instructors. These tend to focus upon the local area and region where the course is taught or upon unique geographic areas of the United States that illustrate distinctive topics relatively easy to interpret. This is a logical decision especially when most of the students are freshmen or sophomores with little geographic training to permit analyses and interpretations of complex areas. Additional readings are frequently recommended and made available to the students. Among the most popular is Maps for America, a U.S. Government publication by Thompson (1979).

Map use courses are generally considered to be "hands on" classes with practical

experience using published maps. Most instructors have an individualized set of exercises. The extent to which those exercises form part of the final grade varies from 10 to 50 percent. Manual grading of exercises and tests is the norm, but computer assisted scoring methods, especially the newly developed MDT answer bank method, have considerable time-saving advantages (Anderson, 1986). A combination of lectures, exercises and tests constitute most courses, but class sizes and the availability of adequate rooms, teaching materials and student assistants dictate a wide variety of methods of presentation. The use of distance education methods (as in the Open University in the United Kingdom) is uncommon, but is very appropriate for semi-independent instruction of large numbers of students.

Regardless of the methods employed, most map use courses teach a combination of both analytical skills and interpretive thinking. The map use skills are closely related to the core content and appear to dominate the courses, judging by the syllabi. The interpretive thinking is primarily taught with individualized examples and attempt to show how the skills can be put to use.

ISSUES FOR COURSE PLANNING

The preceeding descriptive paragraphs suggest a more systematic analysis of map use courses. The nine issues to be considered each have three to five subdivisions:

A. Content: 1) Core; 2) Secondary; 3) Peripheral
B. Course Objectives 1) Map skills; 2) Map appreciation; 3) Map relevance
C. Target Learner Populations 1) Map makers; 2) Professional map users; 3) General university students (including school teachers); 4) General public
D. Instructional Materials 1) Artificial exercises; 2) Local area studies; 3) "Programmed" exercises about real locations; 4) Free format inquiry
E. Geographic area examples 1) Isolated extracts and hypothetical maps; 2) Local area and field maps; 3) Teaching sets of topographic quadrangles; 4) Map collections with single copies
F. Number of map examples 1) Few; 2) Some; 3) Many
G. "Style" of instruction 1) Charismatic; 2) Conventional; 3) "Canned"
H. Class size 1) Self-study (1-5); 2) Small (6-20); 3) Medium (21-50); 4) Large (51-150); 5) Mass (over 150)
I. Current and potential outreach 1) Few; 2) Many; 3) Mass

These nine issues are all interrelated (Figure 1), but the combinations of subdivisions vary with each course. The most common combination focuses on the skills approach (B1) to the core content (A1) for future professional map users (C2) in medium sized classes (H3). Beyond those four issues, the other subdivisions permit considerable variation. As discussed in the preceeding section of this paper, these are all valid approaches. Each instructor is at liberty to (and often does) shift the emphasis within his or her map use course by increasing (or diminishing) the use of local maps, the thematic (or topographic) maps, and the balance of lectures and exercises. But an emphasis on core skills seems to predominate.

THE CHALLENGE OF MAP APPRECIATION

A comparison of Figure 1 and the above description of most map use skills courses reveals the low degree of attention given to the map appreciation and map relevance objectives. "Map relevance" refers to the use of maps in situations where the map is not the center of attention; it is the relevance of maps for social studies, tourism and casual graphic communication; it is almost "map fun." Map appreciation and relevance could be emphasized in courses directed to the general public and non-map-related university students. Naturally, those courses would have some skills objectives, but probably only in a similar degree to which map relevance is a relatively small component of most existing map skills courses. In that regard, a map

appreciation course could have much in common with standard "art appreciation" courses.

Map appreciation courses have a tremendous advantage over many other courses for the teaching of interpretive thinking because of the great abundance of readily available, high quality maps for the full diversity of geographic locations, both within the United States and overseas. Whether for the more general students, the public at large, or geography-cartography majors, the development of the analytical and interpretive capabilities is certainly one of the strong points for the justification of the more widespread teaching of map appreciation courses.

But what about the map use skills? One point of view is that a second course be offered for the map-related majors. A quantitative emphasis would be very appropriate and could be taught with increased rigor. Cartometrics or spatial analysis from maps would integrate well with some components of existing courses in quantitative geography or spatial analysis. Some related ideas about a two-course sequence were expressed by Stephens and Canright (1983) in their paper concerning geographic cartography.

In response to student "feedback" (read "criticism of the skills approach with exercises") and the desire to increase student enrollments, this author is converting his "Maps and Map Reading" course toward appreciation and map relevance objectives (B2 and B3). Skills will have an as-of-yet undetermined percentage of the course. More attention will be given to the activities like Carstensen's (1986) Map Reading Tournament and the "Map Exploration of an Unknown Foreign City" described at the Map Use Materials Exchange session at the 1985 AAG Conference. Such a shift would emphasize a different set of subdivisions within the nine issues. These would include the use of many more individual maps from map collections (E4), noteworthy places, and individualized (D4) (not exercise controlled) student efforts. It is quite possible that the map relevance and appreciation emphasis will have increased appeal to the geography professors without cartographic specialization who are often asked to teach a map use course.

The "market" of General students (C3) for such courses is very large (H4 and I2); the opportunities are even greater for major outreach to adult learners (C4) via mass education techniques (H4 and I3) such as distance education. The author has several years of experience with such materials and is actively preparing a distance education course for map appreciation, using an approach somewhat modified from the one described in the paper by Anderson (1985). Suprisingly, the content still focuses on the core concepts (A1) which are more integrated and overlapping, as illustrated by how the study of map "detail" incorporates issues of scale, symbol generalization and spacing of coordinate grids. Likewise, simple orienteering pulls together the concepts of direction, distance, and symbols. Although the orientation section was dropped from the second edition, Map Use by Muehrcke (1986) is an expanded and most appropriate open-book reference work for map appreciation courses. Although map appreciation and map relevance require a shift in the course objectives and methods, the subject matter and content remain firmly focused on maps.

CONCLUSION

All of the above could be debated, with all sides finding good arguments. At last year's meeting this author was distributing map skills exercises and he still advocates such an approach for specific target populations. There is an obvious need for further discussion, materials preparations, in-class experimentation and the reporting of more experiences in the map relevance fun and appreciation side of map use.

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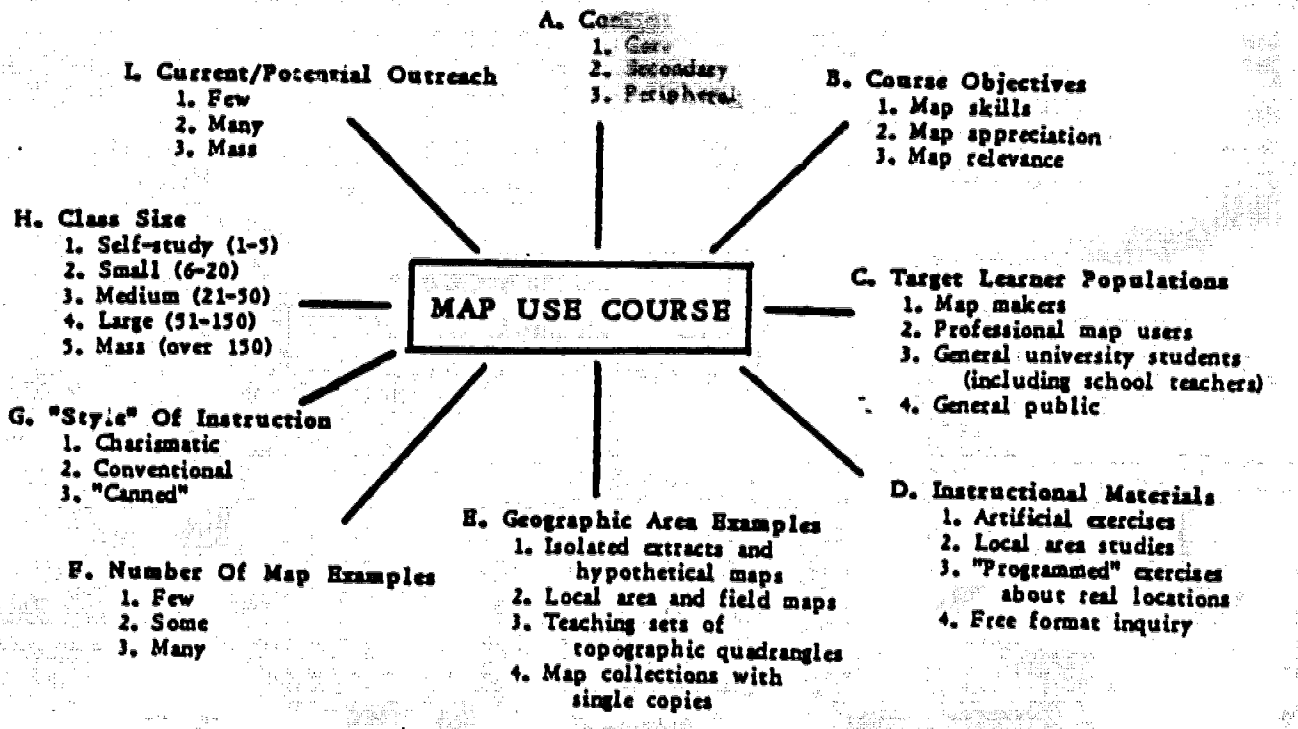

FIGURE 1: Issues And Subdivisions In Map Use Courses